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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/901,558	07/10/2001	Raphael Rahamim	39852/CAG/B600	4803
23363	7590	06/28/2005	EXAMINER	
CHRISTIE, PARKER & HALE, LLP PO BOX 7068 PASADENA, CA 91109-7068			SINGH, RAMNANDAN P	
			ART UNIT	PAPER NUMBER
			2646	

DATE MAILED: 06/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/901,558

Applicant(s)

RAHAMIM ET AL.

Examiner

Ramnandan Singh

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 59,66-71,77,83-88 and 94-100 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 59,66-71,77,83-88 and 94-100 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. The Preliminary amendment filed on 07 January 2002 contains claims directed to the following patentably distinct species of the claimed invention:

Group I: Claims 59-105, drawn to an analog front end for digital subscriber line (DSL), classified in class 379, subclass 399.01.

Group II: Claim 106 is directed to a lightning protection circuit, classified in class 379, subclass 412.

Group III: Claims 107-110 are directed to an automatic gain control circuit, classified in class 330, subclass 252.

2. The inventions are distinct, each from the other because Group I is drawn to an analog front end for digital subscriber line; Group II is directed to a lightning protection circuit, and Group III is directed to an automatic gain control circuit.

3. Inventions claimed in Groups I, II and III are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because Groups I, II

and III are distinct inventions. The subcombination has separate utility such as a line driver, an amplifier and an echo canceller.

4. Applicant is required under 35 U.S.C. 121 to elect a single disclosed invention from Groups I, II and III for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, there is no generic claim.

5. Species:

Species I: Claims 64-65 are directed to a line driver.

Species II: Claims 66-71, 83-88, 95-100 are directed to amplifier.

Species III: Claims 72-74, 80-82, 89-91, 101-103 are directed to an echo canceller.

6. Species I, II and III are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, species I, II and II have separate utility such as a line drive, echo canceller. See MPEP § 806.05(d).

7. Applicant's response filed on Jan. 31, 2005 confirmed the election of Group I and Species II, namely claim 59, 66-71, 77, 83-88 and 94-100. As a result, claims 60-65,

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72-76, 78-82, 89-93, and 101-110 are cancelled. Hence, this restriction requirement is made FINAL.

8. **Status of Claims**

Claims 1-58, 60-65, 72-76, 78-82, 89-93, and 101-110 are cancelled.

Claims 59, 66-71, 83-88 and 94-100 are pending.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. Claims 59, 77, 94 are rejected under 35 U.S.C. 102(e) as being anticipated by Polley et al [US 6,618,480 B1].

Regarding claim 59, Polley et al teach an analog-front-end (AFE) for a digital subscriber line (DSL) modem shown in Fig. 1, the analog-front-end comprising:

a single-end receive channel (i.e. path) (22));

a single-end transmit channel (21);

a converter (i.e. an electronic hybrid 24) configured to convert a differential input signal from a twisted pair telephone line (14) to a single-ended input signal for the receive channel, and convert a single-ended output from the transmit channel to a differential output signal for transmission on the twisted pair telephone line [Figs. 1-2; col. 1, line 29 to col. 2, line 21; col. 5, lines 10-15; Abstract].

Claims 77 and 94 are essentially similar to claim 59 and are rejected for the reasons stated above.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 66-69, 83-86 and 95-100 are rejected under 35 U.S.C. 103(a) as being unpatentable over Polley et al as applied to claims 59, 77 and 94 respectively above, and further in view of Nabicht et al [US 6,621,346 B1].

Regarding claim 66, although Polley et al teach the analog front end having amplifiers to amplify transmit and receive signals [Fig. 2], they do not disclose expressly an amplifier having automatic gain control.

Nabicht et al teach an analog front end (12) in a DSL modem (15) system [Figs. 1-5; col. 3, line 51 to col. 4, line 26], wherein the single-ended received channel comprises an amplifier (54C) having automatic gain control [Figs. 4, 5; col. 6, lines 4-27; col. 8, line 54 to col. 9, line 14].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the automatic gain control amplifier of Nabicht et al with Polley et al in order to provide stable operations in a high-frequency, high precision, and high-data rate modem system [Nabicht et al; col. 4, lines 31-46; col. 9, lines 5-14].

Claim 83 is essentially similar to claim 66 and is rejected for the reasons stated above.

Regarding claims 95-97, see Fig. 4 of Nabicht et al [col. 9, lines 5-14].

Regarding claims 67-69, Nabicht et al further teach the AFE wherein the automatic gain control circuit of the amplifier 54C comprises linear voltage controlled resistors made of semiconductor field effect transistors (MOSFET) shown in Fig. 5, functioning as a variable attenuator configured to attenuate the single-ended input signal [Figs. 4-5; col. 8, line 19 to col. 9, line 59; col. 11, lines 29-55].

Regarding claims 84-86, 98-100, the limitations are shown above.

13. Claims 70-71 and 87-88 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Polley et al and Nabicht et al as applied to claims 69, and 86 respectively above, and further in view of Ouellette [US 4,178,482].

Regarding claims 70-71, although Nabicht et al an automatic gain control amplifier 54C [Figs. 4, 5; col. 6, lines 4-27; col. 8, line 54 to col. 9, line 14], they do not disclose expressly the structure of a field-effect transistor (MOSFET). It may, however, be noted that the structure of the field-effect transistor is well-known in the art.

Ouellette teaches the structure and configurations of a field-effect transistor (MOSFET) for use in an automatic gain control circuit [Figs. 1-5; col. 2, lines 3-17; col. 5, lines 55-62; col. 11, lines 40-47; col. 11, line 55 to col. 12, line 29].

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the structure and configuration of the field-effect transistor (MOSFET) of the automatic gain control circuit of Ouellette with Nabicht et al in order to eliminate frequency intermodulation and distortion problems at a receiver's AGC circuit [Ouellette; col.1, lines 61-68].

Regarding claims, 87 and 88, the limitations are shown above.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(i) Hoover et al [US 4,852,444] teach a voltage-controlled resistor as an automatic gain control device using a field-effect transistor [Figs. 4, 13; col. 2, line 65 to col. 3, 19]; and

(ii) Tchagaspanian [US 6,646,489 B1] teaches a device for switching radio frequency signals [Figs. 1-3; col. 2, line 59 to col. 3, line 14; col. 3, lines 32-67].

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramnandan Singh whose telephone number is (571) 272-7529. The examiner can normally be reached on M-TH (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7564. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramnandan Singh
Examiner
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A handwritten signature in black ink, appearing to be 'RNS' with a long horizontal stroke underneath.A handwritten signature in black ink, appearing to be 'Sinh Tran' in a stylized cursive script.

SINH TRAN
SUPERVISORY PATENT EXAMINER